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James Howard Drew

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02/06/2007

VERIZON

PATENT MANAGEMENT GROUP

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ARLINGTON, VA 22201-2909

EXAMINER

ROBINSON BOYCE, AKIBA K

ART UNIT

PAPER NUMBER

3628

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
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3 MONTHS

02/06/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/06/2007.

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**Office Action Summary**

Application No.

09/593,118

Applicant(s)

DREW ET AL.

Examiner

Akiba K. Robinson-Boyce

Art Unit

3628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8, 10, 12, 13, 16-19, 21, 23, 25, 27, 28, 31-34, 36, 38, 40, 42, 43, 46-49, 51, 53, 55, 57, 58, 61-71 is/are rejected.
- 7) ☒ Claim(s) 5, 7, 9, 11, 14, 15, 20, 22, 24, 26, 29, 30, 35, 37, 39, 41, 44, 45, 50, 52, 54, 56, 59 and 60 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Due to correspondence filed 5/5/06, the following is a final office action. Claims 1-71 remain pending in this application and have been examined on the merits. The previous rejection has been maintained. Claims 1-71 are rejected/objected as follows.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 16, 17, 19, 31, 32, 34, 46, 47, 49, 63-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flockhart et al (US 6,064,731), and further in view of Horowitz et al (US 6,349,290).

As per claims 1, 16, 31, 46, Flockhart et al discloses:

Generating, by a processing system, a hazard function model based on attributes relating to a plurality of current customer accounts, /a calculating module/means for calculating, (col. 3, lines 5-11, "at risk" customer function invoked by account number, where the "at risk" customer function represents the hazard function model and the customer account number represents the attribute);

Generating, by the processing system, a hazard function for an existing customer, to determine probability of churn based on the hazard function model and account data associated with customer and corresponding to the attributes/a generating

Art Unit: 3628

module/means for generating, (Col. 3, lines 32-38, comparing the customer account number to the "at risk" database to determine if the customer is an "at risk" customer, also col. 1, lines 12-32 shows that the determination of an "at risk" customer is for existing customers);

determining a focus for retention-based interactions with the customer based on at least one of the hazard function and gain in lifetime value/means for determining, (col. 3, lines 38-52, shows that if there is an "at risk" customer, special treatment is implemented, also, col. 1, lines 24-28 shows that business generally implements customer service focus on agent training in an attempt to maintain high standards of service).

Flockhart et al does not specifically disclose calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort, but does disclose the identification of "at risk" customers in col. 3, lines 32-38.

However, Horowitz et al discloses calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort /a calculating module/means for calculating, (Col. 22, lines 6-18, shows the calculation of a "life stage" factor through comparison of the risk level of the advice to the risk tolerances to the previous customers' activity). Horowitz et al discloses this limitation in an analogous art for the purpose of showing that the risk factor information for the customer's "life stage" could be updated in the customer profile, thereby maintaining a record of the customer's risk to the business.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to calculate a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort with the motivation of determining the customers likelihood of switching during the time the customer is committed to the business.

As per claims 2, 17, 32, 47, Flockhart et al does not specifically disclose calculating a lifetime value /calculates a lifetime value, but does disclose the identification of "at risk" customers in col. 3, lines 32-38.

However, Horowitz et al discloses:

Calculating a lifetime value based on original contract terms and revenue associated with the customer/calculates a lifetime value, Flockhart et al does not specifically disclose calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort, but does disclose the identification of "at risk" customers in col. 3, lines 32-38.

However, Horowitz et al discloses:

Calculating a lifetime value based on original contract terms and revenue associated with the customer/calculates a lifetime value, (Col. 22, lines 6-18, shows the calculation of a "life stage" factor through comparison of the risk level of the advice to the risk tolerances to the previous customers' activity, w/ col. 9, lines 8-14, shows the implementation of transactional sessions that only needs a single session to provide fulfillment of the original intent). Horowitz et al discloses this limitation in an analogous art for the purpose of showing that the risk factor information for the customer's "life

Art Unit: 3628

stage" could be updated in the customer profile, thereby maintaining a record of the customer's risk to the business.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to calculate a lifetime value based on original contract terms and revenue associated with the customer with the motivation of determining the customers likelihood of switching during the time the customer is committed to the business.

As per claims 4, 19, 34 and 49, Flockhart et al discloses:

Specifying a set of incentives to offer the customer based on the gain in lifetime value, (Col. 3, lines 40-48, "at risk" customers given high priority).

As per claim 63, Flockhart et al discloses:

Generating, by a processing system and for each of a plurality of customers, a hazard function to determine a probability of churn for each customer, the hazard function based on attributes relating to customer account information, (Col. 3, lines 32-38, comparing the customer account number to the "at risk" database to determine if the customer is an "at risk" customer, also col. 1, lines 12-32 shows that the determination of an "at risk" customer is for existing customers);

Identifying a temporal-based retention effort based on the hazard function for each of the plurality of customers, (col. 3, lines 38-52, shows that if there is an "at risk" customer, some kind of special treatment is implemented, also, col. 1, lines 24-28 shows that business generally implements customer service focus on agent training in an attempt to maintain high standards of service);

Art Unit: 3628

Determining a focus for customer interaction based on the expected gain in value, (col. 3, line 63-Col. 4, line 5, shows that if a threshold is exceeded, the call is routed to a supervisor)

Flockhart et al fails to disclose calculating, for each of the plurality of customers, an expected gain in value from the identified retention effort, but does disclose the identification of "at risk" customers in col. 3, lines 32-38.

However, Horowitz et al discloses calculating, for each of the plurality of customers, an expected gain in value from the identified retention effort, (Col. 22, lines 6-18, shows the calculation of a "life stage" factor through comparison of the risk level of the advice to the risk tolerances to the previous customers' activity, where the advice given represents the retention effort). Horowitz et al discloses this limitation in an analogous art for the purpose of showing that the risk factor information for the customer's "life stage" could be updated in the customer profile, thereby maintaining a record of the customer's risk to the business.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to calculate, for each of the plurality of customers, an expected gain in value from the identified retention effort with the motivation of determining the customers likelihood of switching during the time the customer is committed to the business.

As per claim 64, Flockhart et al discloses:

Generating a hazard function, based on a reference hazard function model, for each of the plurality of customers, (Col. 3, lines 32-38, comparing the customer account

number to the "at risk" database to determine if the customer is an "at risk" customer, where the reference is coming from the values in the database);

As per claim 65, Flockhart et al discloses:

Wherein the temporal-based retention effort comprises retention actions directed to each customer during a second time period occurring after the first time period, (col. 3, line 53-col. 4, line 5, first routing the call to a specialist, then to a supervisor).

4. Claims 3, 6, 8, 10, 12, 13, 18, 21, 23, 25, 27, 28, 33, 36, 38, 40, 42, 43, 48, 51, 53, 55, 57, 58, 66-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flockhart et al (US 6,064,731), and further in view of Horowitz et al (US 6,349,290), and further in view of Bank Marketing International "Are your customers profitable?".

As per claims 3, 18, 33 and 48, Flockhart et al discloses:

Analyzing...the hazard function generated for the customer; and specifying a set of marketing techniques based on...the hazard function, (Col. 3, lines 32-38, comparing the customer account number to the "at risk" database to determine if the customer is an "at risk" customer, also col. 1, lines 12-32 shows that the determination of an "at risk" customer is for existing customers, w/col. 3, lines 38-52, shows that if there is an "at risk" customer, special treatment is implemented, also, col. 1, lines 24-28 shows that business generally implements customer service focus on agent training in an attempt to maintain high standards of service).

Flockhart et al, nor Horowitz et al disclose analyzing the shape of the hazard function generated for the customer, but Flockhart does disclose an "at risk" customer function in col. 3, lines 5-11.



However, Bank Marketing shows that altered models are used to determine the likelihood of a customer switching on Page 4, paragraph 8, lines 1-5. Therefore, the analysis of the shape of the hazard function is obvious with Bank Marketing this section shows that factors such as propensity to defect and altered cost models associated with the business are evaluated, and a rank order is assigned to customer base based on the lifetime value.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to analyze the hazard function generated for the customer, and specify a set of marketing techniques based on the hazard function with the motivation of implementing a marketing technique that suits the customer's situation.

As per claims 6, 21, 36, 51, neither Flockhart et al, Horowitz, nor Bank Marketing disclose taking no further steps to deter churn, but Flockhart et al does disclose taking the steps to deter churn for a particular call in Col. 3, lines 53-63, and discloses that a customer abandons a call in col. 4, lines 50-52. Therefore, taking no further steps to deter churn is obvious with Flockhart et al since after the customer abandons the call, there would be no reason to deter churn since the customer is no longer in the system and churn in this case, is directed towards customers who are making calls.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to take no further steps to deter churn with the motivation of ending the churn process when the customer is no longer part of the customer-base.

As per claims 8, 10, 12, 23, 25, 27, 38, 40, 42, 53, 55, 57, Flockhart et al fails to disclose having a moderate pre-expiration effort where new contracts or continued

Art Unit: 3628

contracts are the goal/ concentrating effort on pre-expiration of contract where a contract renewal may not be required/having high intensity pre-expiration effort with continued competitive offers to maintain customer, but Flockhart et al does disclose determining the possibility of churn by determining "at risk" customers in col. 3, lines 5-8.

However Horowitz discloses:

Having a moderate pre-expiration effort where new contracts or continued contracts are the goal/concentrating effort on pre-expiration of contract where a contract renewal may not be required/having high intensity pre-expiration effort with continued competitive offers to maintain customer, (Col. 20, lines 50-55, includes evaluating the performance of contracts). Horowitz discloses this limitation in analogous art for the purpose of showing that evaluating the performance of contracts can be implemented into the analysis of advice given to a customer.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to produce new or continued contracts with the motivation of keeping dedicated customers.

As per claims 13, 28, 43 and 58, neither Flockhart et al nor Horowitz disclose determining that value of the set of incentives offered to the customer does not exceed the gain in lifetime value, but Flockhart et al does disclose that a call is routed to a supervisor for special handling if a threshold is exceeded in Col. 4, lines 1-5.

However, Bank Marketing discloses:

Determining that value of the set of incentives offered to the customer does not exceed the gain in lifetime value, (page 5, paragraph 11, lines 5-8, represented by offering a lower price, or dropping a charge by knowing the lifetime value and still making a good return). Bank Marketing discloses this limitation in an analogous art for the purpose of showing that incentives such as offering a lower price can be included without affecting the customer's loyalty to the business.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to determine that value of the set of incentives offered to the customer does not exceed the gain in lifetime value with the motivation of matching the value of incentives with the lifetime value.

As per claims 66-69, Flockhart fails to disclose wherein calculating a gain in lifetime value based on a change in the hazard function resulting from a retention effort, but does disclose a retention effort by identifying "at risk" customers and then implementing special treatment as disclosed in col. 3, lines 30-52.

However, Horowitz et al discloses:

wherein calculating a gain in lifetime value based on a change in the hazard function resulting from a retention effort, (Col. 22, lines 6-18, shows the calculation of a "life stage" factor through comparison of the risk level of the advice to the risk tolerances to the previous customers' activity, where the advice given represents the retention effort). Horowitz et al discloses this limitation in an analogous art for the purpose of showing that the risk factor information for the customer's "life stage" could

be updated in the customer profile, thereby maintaining a record of the customer's risk to the business.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to calculate a gain in lifetime value based on a change in the hazard function resulting from a retention effort with the motivation of determining the customers likelihood of switching during the time the customer is committed to the business.

Neither Flockhart et al nor Horowitz et al disclose calculating expected revenue multiplied by an increase in remaining lifetime resulting from the retention effort, but Flockhart et al does disclose a retention effort by identifying "at risk" customers and then implementing special treatment as disclosed in col. 3, lines 30-52.

However, calculating a gain in lifetime value based on a change in the hazard function resulting from a retention effort comprises calculating expected revenue multiplied by an increase in remaining lifetime resulting from the retention effort is obvious with Bank Marketing. Bank Marketing does not specifically state that the expected revenue is multiplied by an increase in the remaining lifetime, but this article leads to the same result. Bank Marketing shows that customer profitability forms the foundation for marketing to design and effectively supply new service and product offerings, therefore, once these offerings are made, and the customer becomes active, then the lifetime value is determined to increase because of the retention offerings. Bank Marketing describes implementing activity based costing into the equation for determining the customer value on page 3, paragraphs 9-12. On page 3, paragraph 17-

Page 4, paragraph 4, Bank Marketing discloses the identification of patterns as activity based costing is altered, which ultimately helps determine profitable segments for the customer base, and eventually the lifetime value for that customer, and therefore means that revenue alters as well since its shown that the amount of profit customers bring in by segment by being involve in activity, is determined to assess potential profitability. In this case, utilizing the profitable segments in the equation for calculating the lifetime value represents the gain in lifetime value, where on Page 5, paragraph 11-Page 6, Paragraph 2, the article shows retention efforts such as offering lower price, etc. can be implemented by knowing the lifetime value. Bank Marketing discloses this limitation in an analogous art for the purpose of showing that certain equations can be used to calculate a gain in lifetime value.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to calculate a gain in lifetime value based on a change in the hazard function resulting from a retention effort by calculating expected revenue multiplied by an increase in remaining lifetime resulting from the retention effort with the motivation of ultimately determining the gain in lifetime value.

5. Claims 61, 62, 70, 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flockhart et al (US 6,064,731), and further in view of Horowitz et al (US 6,349,290), and further in view of Sanders (US 6,411,936).

As per claim 61, Flockhart et al discloses:

Generating...a hazard function for an existing customer, to determine probability of churn based on account data associated with customer and corresponding to a set

Art Unit: 3628

attributes, (Col. 3, lines 32-38, comparing the customer account number to the "at risk" database to determine if the customer is an "at risk" customer, also col. 1, lines 12-32 shows that the determination of an "at risk" customer is for existing customers);

determining a focus for a retention-based program based on at least one of the hazard function and the gain in lifetime value/means for determining, (col. 3, lines 38-52, shows that if there is an "at risk" customer, special treatment is implemented, also, col. 1, lines 24-28 shows that business generally implements customer service focus on agent training in an attempt to maintain high standards of service).

Flockhart et al does not specifically disclose calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort, but does disclose the identification of "at risk" customers in col. 3, lines 32-38.

However, Horowitz et al discloses calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort, (Col. 22, lines 6-18, shows the calculation of a "life stage" factor through comparison of the risk level of the advice to the risk tolerances to the previous customers' activity).

Horowitz et al discloses this limitation in an analogous art for the purpose of showing that the risk factor information for the customer's "life stage" could be updated in the customer profile, thereby maintaining a record of the customer's risk to the business.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to calculate a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort with the motivation of

determining the customers likelihood of switching during the time the customer is committed to the business.

Both Flockhart et al nor Horowitz disclose a multilayer feed-forward neural network, but Flockhart et al does disclose a telephone network in Fig. 1.

However, Sanders discloses:

a multilayer feed-forward neural network, (Col. 19, lines 33-36, this neural network includes multiyear feed-forward types). Sanders discloses this limitation in an analogous art for the purpose of showing that neural networks can be used to perform necessary processing.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to incorporate a multiyear feed-forward neural network with the motivation of utilizing this type of intelligence to determine the possibility of churn.

As per claim 62, Flockhart et al discloses:

Implementing the program based on the determined focus, (col. 3, lines 38-52, shows that if there is an "at risk" customer, special treatment is implemented, also, col. 1, lines 24-28 shows that business generally implements customer service focus on agent training in an attempt to maintain high standards of service).

As per claim 70, Flockhart et al discloses:

generate a hazard function model based on the account data associated with a plurality of current customer accounts and corresponding to the set of attributes, (col. 3, lines 5-11, "at risk" customer function invoked by account number, where the "at risk"

Art Unit: 3628

customer function represents the hazard function model and the customer account number represents the attribute); and

Wherein generating a hazard function includes generating a hazard function for an existing customer, to determine probability of churn, based on the hazard function model and the account data associated with the customer and corresponding to a set of attributes, (Col. 3, lines 32-38, comparing the customer account number to the "at risk" database to determine if the customer is an "at risk" customer, also col. 1, lines 12-32 shows that the determination of an "at risk" customer is for existing customers);

Both Flockhart et al and Horowitz fail to disclose training the neural network, but does disclose using the telephone network to determine "at risk" customers in Col. 3, lines 5-8.

However, Sanders discloses:

Training the neural network, (col. 17, line 62-col. 18, line 33, shows the process of determining the direction of movement and the accuracy of projections of values to come up with a value enhancement solution, w/ col. 19, lines 34-37, shows that the process is carried out by neural network, thus this network must be trained in order to carry out the process). Sanders discloses this limitation in an analogous art for the purpose of showing that neural networks can be used to perform necessary processing.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to incorporate a neural network with the motivation of utilizing this type of intelligence to determine the possibility of churn.



As per claim 71, both Flockhart et al and Horowitz fail to disclose wherein training the neural network comprises loading an input layer of the neural network with values representing the set of attributes for the plurality of current customer accounts, but Flockhart et al does disclose using the telephone network to determine "at risk" customers in Col. 3, lines 5-8.

However, Sanders discloses:

wherein training the neural network comprises loading an input layer of the neural network with values representing the set of attributes for the plurality of current customer accounts, (col. 20, lines 12-20, shows the acceptance of input pertaining to an account and to provide a set of solutions customized for *at least one* of a specific target customer account). Sanders discloses this limitation in an analogous art for the purpose of enhancing overall enterprise value.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to load an input layer of the neural network with values representing the set of attributes for the plurality of current customer accounts with the motivation of applying account specific information in order to enhance the enterprise value.

***Allowable Subject Matter***

6. Claims 5, 7, 9, 11, 14, 15, 20, 22, 24, 26, 29, 30, 35, 37, 39, 41, 44, 45, 50, 52, 54, 56, 59, 60, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

7. Applicant's arguments filed 11/27/06 have been fully considered but they are not persuasive.

As per claims 1, 2, 4, 16, 17, 19, 31, 32, 34, 46, 47, 49 and 63-65, applicant argues that Flockhart does not disclose what is presently claimed.

Specifically, as per claim 1, applicant argues that at least a "hazard function model" is not disclosed by Flockhart, since, according to applicant, the "at risk" customer function of Flockhart is a database of customers "who have received poor service or are otherwise dissatisfied", and not "a formula representing the probability of a customer's termination of service based on previous behavior derived from a stored data", nor can a "expected tenure of a customer" be determined from the "at risk" customer function of Flockhart. However, the "at risk" customer function does represent the "hazard function model" of the present invention since, in both the Abstract, lines 1-4, and Col. 5, lines 10-12, Flockhart discloses that "at risk" is a determination that the party is a risk of being lost as a customer to the business, and also discloses that this "at risk" indication is stored, therefore, the determination that the party is at risk of being lost as a customer to the business is derived from the dissatisfied indicators which are stored in the database. An example of this type of indicator being stored in a database is shown in Col. 4, lines 22-31. In this case, the customer is considered to be "at risk" as a result of hanging up a call, therefore, ultimately terminating service for that particular call with the call center. The "at risk" information in the database as a result of the customer being on hold and possibly hanging up, therefore determines the

Art Unit: 3628

probability of the customer ending the call, and ultimately terminating service for that call at a call center. Flockhart does disclose that businesses generally identify "at risk" customers" who have received poor service or are otherwise dissatisfied in col. 1, lines 20-23, however, this is not what defines an "at risk" customer. In Flockhart, as described above, "at risk" customers are customers at risk of being lost as customers to a business. In addition, applicant's claim does not specifically disclose the determination of the "expected tenure of a customer", which determines the expectation of holding on to a customer, but does specifically disclose "the probability of churn" for a customer, which determines the probability that the customer will leave. However, in Flockhart, col. 3, lines 38-52, shows that if there is an "at risk" customer, special treatment is implemented. Flockhart also discloses that businesses generally implement customer service focus on agent training in an attempt to maintain high standards of service in col. 1, lines 24-28. All of this special treatment/focus is given in order to hold the customer, which is analogous to customer tenure. However, in col. 3, lines 32-38, the customer account number is compared to the "at risk" database to determine if the customer is an "at risk" customer. This indication is analogous to the probability of churn, since, as explained above that when the customer is "at risk" it is a probability that the customers is at risk of being lost as customers to a business.

Applicant also argues that Horowitz fails to cure Flockhart's deficiencies, and does not disclose "generating, by a processing system, a hazard function model based on attributes relating to a plurality of current customer accounts" as recited in claim 1. However, in Horowitz, the customer profile is built from the customer account as shown

Art Unit: 3628

in col. 37, lines 54-58. Also, in Col. 22, lines 13-14, Horowitz discloses that the risk level based on the customer profile is compared to the risk tolerances to previous customers' activity in order to determine a life stage factor. Therefore the life stage factor is determined as a result of the comparison of previous customer profiles, which are derived from customer accounts.

As per independent claims 16, 31 and 46, these claims are argued for reasons similar to those of independent claim 1, and are therefore rejected for the same reasons.

As per claim 63, applicant argues that Flockhart fails to disclose "identifying a temporal-based retention effort based on the hazard function for each of the plurality of customers". However, as discussed above with respect to claim 1, the "hazard function model" is represented by the "at risk" customer function. In col. 3, lines 38-52 of Flockhart, it shows that if there is an "at risk" customer, some kind of special treatment is implemented, also, col. 1, lines 24-28 shows that business generally implements customer service focus on agent training in an attempt to maintain high standards of service. Since this special treatment/focus represents the retention effort, and the "at risk" customer function represents the "hazard function model", then one can conclude that the temporal-based retention effort based on the hazard function.

Applicant also traverses the rejection of claims 3, 6, 8, 10, 12, 13, 18, 21, 23, 25, 27, 28, 33, 36, 38, 40, 42, 43, 48, 51, 53, 55, 57, 58 and 66-69.

Specifically, as per claims 3, 6, 8, 10, 12, 13 and 66 depend upon claim 1, claims 18, 21, 23, 25, 27, 28 and 67 depend upon claim 16, claims 33, 36, 38, 40, 42, 43

Art Unit: 3628

and 68 depend upon claim 31, and claims 48, 51, 53, 55, 57, 58 and 69 depend upon claim 46, and are still rejected for the same reasons as discussed with respect to claims 1, 16, 31, and 46.

In addition, applicant argues that bank Marketing does not cure the deficiencies of Flockhart and Horowitz, and argues that although Bank Marketing discloses predicting "the length of time a customer is likely to stay with [a bank]", it does not teach or suggest "a hazard function model" as recited in claims 1, 16, 31, and 46, and all claims which depend from these claims. However, the Bank Marketing article was cited to show that altered models are used to determine the likelihood of a customer switching on Page 4, paragraph 8, lines 1-5. Therefore, when combined with Flockhart and Horowitz, the analysis of the shape of the hazard function is obvious with Bank Marketing this section shows that factors such as propensity to defect and altered cost models associated with the business are evaluated, and a rank order is assigned to customer base based on the lifetime value.

As per claims 61, 62, 70 and 71, the applicant argues that prior art does not teach "generating a hazard function". Applicant also argues that the requisite motivation to combine the applied references is lacking with respect to claim 61. However, as discussed above with respect to claim 1, the "at risk" customer function of Flockhart represents the "hazard function model" of the present invention. In addition, since Flockhart discloses implementing measures to decrease customer retention based on a customer file, Horowitz discloses giving advice based on the customer profile, and Sanders discloses generating recommended solutions based on customer feedback.

The Sanders, Flockhart, and Horowitz references are combinable since all three references are geared towards ultimately determining some type of solution based on customer data.

Since examiner has demonstrated above that independent claims 1, 16, 31 and 46 are rejected, dependent, objected claims 5, 7, 9, 11, 14, 15, 20, 22, 24, 26, 29, 30, 35, 37, 39, 41, 44, 45, 50, 52, 54, 56, 59 and 60 are also still objected since they depend from rejected base claims.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akiba K Robinson-Boyce whose telephone number is 571-272-6734. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

Art Unit: 3628

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on 571-272-6708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7238 [After final communications, labeled "Box AF"], 703-746-7239 [Official Communications], and 703-746-7150 [Informal/Draft Communications, labeled "PROPOSED" or "DRAFT"].

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

A handwritten signature in cursive script, appearing to read "A. R. B.", followed by a horizontal line and the word "Boye".

A. R. B.  
January 24, 2007